ARABLE LAND ALLOCATIONS AS A WINTER FORAGE RESERVE FOR CATTLE IN COMMUNAL AREAS OF CENTRAL EASTERN CAPE PROVINCE, SOUTH AFRICA

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1. INTRODUCTION

In communal areas of the central Eastern Cape Province of South Africa, arable land allocations function as forage reserves for cattle during the winter (dry season). Available forage consists mainly of crop residues from harvested fields and a mosaic of grassland vegetation at various stages of succession following crop production. In recent years the removal of state support programmes has resulted in a collapse in crop production in the region and consequently many arable fields lie idle throughout the year. There is thus considerable interest in making more effective use of these arable land allocations for cattle production. However, the dynamic between livestock and arable land in communal areas is an area that has received little previous research attention. In particular little is known about the quality of the available forage during the dry season and how much contribution it makes to maintaining animal body condition. Thus, there is little empirical data on which to base recommendations.

This paper documents research undertaken to characterise the current contribution made by these arable areas to cattle production and how this might be improved (Bennett, 2002). The research was undertaken at two contrasting study sites, selected to be representative of the full range of social and ecological diversity in the region.

2. OVERVIEW OF STUDY SITES

The research was undertaken at two villages, Guquka and Koloni, in the central region of the Eastern Cape Province.

Guquka, is located in Victoria East District and is part of the former AmaKhuze Tribal Authority. The range area amounts to some 400 ha and is shared with the neighbouring village of Gilton and the adjacent township of Kayalethu. Rangeland is separated from arable and residential land by fencing. The local rangeland type is sourveld, which becomes nutritionally poor as the grass sward matures and is consequently unproductive during the dry season.

Koloni, is one of several villages that compose the AmaGqunukwebe Tribal Authority located in Middledrift District. Rangeland amounts to 650 ha (1050 ha including the arable lands) and belongs exclusively to the people of Koloni. It is separated from arable and residential land by fencing and is also divided into four separate grazing camps. The local rangeland type is sweetveld, which remains nutritious as the grass sward matures, maintaining livestock productivity throughout the dry season.

3. METHOD

Measurements were undertaken at both the animal and sward level (Bennett, 2002). The total number of cattle on the arable lands was recorded on a weekly basis and the amount of time they spent feeding in different vegetation types was also documented through observations conducted over three consecutive days during each month of the winter (dry season). At the sward level, data were collected both on the amount (kg/ha) and quality (crude protein, fibre and digestibility) of the available forage, as was the level of forage removal (kg/ha) by cattle during winter 1999.

4. RESULTS

The data were combined to give an overall estimated intake per animal per day during winter 1999 for dry matter, metabolisable energy and crude protein. This is summarised for both villages in Table 1 below.

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Table 1. Estimated mean daily intake of metabolisable energy and crude protein for grazing cattle during winter 1999, based on a maximum dry matter intake of 8.5 kg/animal/day.

	GUQUKA			KOLONI		
STAGE OF WINTER	Dry Matter (kg)	Crude Protein (g)	Energy (MJ)	Dry Matter (kg)	Crude Protein (g)	Energy (MJ)
1st HALF	4.9	195.7	45.8	8.5	343.7	72.1
2nd HALF	8.5	189.6	69.0	8.5	285.5	61.8

A typical animal from these communal areas has a mass of 350 kg (T.D. de Bruyn, unpublished PhD data). According to Kearl (1982), an animal of this mass has a daily intake requirement of 340 g crude protein and 41 MJ energy for maintenance. These intake requirements were used as a benchmark against which the data in Table 1 could be compared to provide an assessment of animal performance at each village at this time.

At Guquka, estimated daily intake levels of crude protein and energy were 196 g and 46 MJ respectively during the first half of the winter and 190 g and 69 MJ during the second half of the winter. It is clear from this that there was a marked and consistent shortfall in crude protein intake amongst cattle at Guquka throughout the winter period. This has negative implications for animal production at this time and explains why animals were in such poor physical condition by the end of the winter. At Koloni levels of shortfall were minimal and would be far less likely to affect animal performance during this period.

5. CONCLUSIONS AND RECOMMENDATIONS

These findings have broad implications for improving cattle production in communal areas of central Eastern Cape. In sourveld areas interventions should focus on alleviating the shortfall in crude protein in the natural winter forage. Recommendations include:

- Greater levels of production of summer crops such as maize. This will provide greater levels of relatively nutritious crop residues for cattle during the subsequent winter.
- Cultivation of specialised winter forage crops for cattle such as oats and barley. Historically, this used to be a far more common undertaking and several farmers at Guquka mentioned that they would be interested in revitalising this practice on a group basis.

Recommendations focused on field crop production are limited by the general constraints to crop production facing most small-scale farmers in communal areas. These include lack of capital, limited availability of tractors and other equipment associated with cultivation and frequently negative financial returns. In this environment it might be more realistic to focus on alternatives such as: -

- Selective use of feed supplements such as urea. This is a low-cost and widely available compound in most developing countries. When used properly it can provide a safe and economical source of non-protein nitrogen (NPN) for livestock, which can alleviate the shortfall in crude protein.
- Controlled burning of the grassland sward at the end of the winter to remove moribund material and stimulate new growth. This should be undertaken on a biannual basis to allow the sward to fully recover (Tainton, 1981).

Given that the natural forage in sweetveld areas is productive enough to maintain animal condition during the winter, interventions should concentrate on making more effective use of available forage resources at both a spatial and temporal level. Recommendations include: -

- Controlling the invasion of range area by bush species, particularly *Acacia karroo*. An approach is suggested based on the selective felling of larger trees for use as firewood, timber and material for kraal construction followed by intensive browsing by goats.
- Construction of a stock dams on arable land allocations. In villages such as Koloni, where fencing allows control over animal movement, the main constraint to maintaining animals exclusively on the arable lands during the winter is lack of water. The provision of a permanent water source on the arable lands would allow them to be utilised more effectively as a grazing resource. Likewise the judicious positioning of such dams would also help control the invasion of unpalatable herbaceous and grass species. These species do not tolerate disturbance. Thus, locating the dams in areas that receive relatively low grazing pressure should have the effect of not only achieving a more even distribution of grazing, but also of reducing the levels of these unfavourable species.

6. REFERENCES

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